

## TRANSPORTATION POOLED FUND PROGRAM QUARTERLY PROGRESS REPORT

Lead Agency (FHWA or State DOT): New Hampshire DOT

### INSTRUCTIONS:

*Project Managers and/or research project investigators should complete a quarterly progress report for each calendar quarter during which the projects are active. Please provide a project schedule status of the research activities tied to each task that is defined in the proposal; a percentage completion of each task; a concise discussion (2 or 3 sentences) of the current status, including accomplishments and problems encountered, if any. List all tasks, even if no work was done during this period.*

<b>Transportation Pooled Fund Program Project #</b> <i>(i.e., SPR-2(XXX), SPR-3(XXX) or TPF-5(XXX))</i>  <p style="text-align: center;">TPF-5(230)</p>	<b>Transportation Pooled Fund Program - Report Period:</b> <input type="checkbox"/> Quarter 1 (January 1 – March 31) <input checked="" type="checkbox"/> Quarter 2 (April 1 – June 30) <input type="checkbox"/> Quarter 3 (July 1 – September 30) <input type="checkbox"/> Quarter 4 (October 1 – December 31)	
<b>Project Title:</b> <p style="text-align: center;"><b>Evaluation of Plant-Produced High-Percentage RAP Mixtures in the Northeast</b></p>		
<b>Name of Project Manager(s):</b> <p style="text-align: center;">Jo Sias Daniel</p>	<b>Phone Number:</b> <p style="text-align: center;">603-862-3277</p>	<b>E-Mail</b> <p style="text-align: center;">jo.daniel@unh.edu</p>
<b>Lead Agency Project ID:</b>	<b>Other Project ID (i.e., contract #):</b>	<b>Project Start Date:</b> <p style="text-align: center;"><b>8/11/2010</b></p>
<b>Original Project End Date:</b> <p style="text-align: center;"><b>12/31/2013</b></p>	<b>Current Project End Date:</b> <p style="text-align: center;">12/31/2014</p>	<b>Number of Extensions:</b> <p style="text-align: center;">1</p>

Project schedule status:

On schedule    
  On revised schedule    
  Ahead of schedule    
  Behind schedule

Overall Project Statistics:

Total Project Budget	Total Cost to Date for Project	Percentage of Work Completed to Date
781,706 Revised to 731,287	703,462	95%

Quarterly Project Statistics:

Total Project Expenses and Percentage This Quarter	Total Amount of Funds Expended This Quarter	Total Percentage of Time Used to Date
	5,222	

## **Project Description:**

### Research Objectives

The objectives of this research project are to:

1. Evaluation the performance in terms of low temperature cracking, fatigue cracking, and moisture sensitivity of plant produced RAP mixtures in the laboratory and field.
2. Establish guidelines on when it is necessary to bump binder grades with RAP mixtures.
3. Provides further understanding of the blending that occurs between RAP and virgin binder in plant-produced mixtures.
4. Refine fatigue failure criteria for RAP mixtures that can be used in the simplified Viscoelastic Continuum Damage (S-VECD) model.

### Research Plan

The research plan is broken down into three phases. Phase I will focus on evaluating the effects of binder grade and plant type on the properties of mixtures with various percentages of RAP. Phase II of the study will be geared towards evaluating the fatigue failure criteria in the S-VECD model. Phase III is a laboratory study to isolate the effects of mixture variables without changing plant production variables.

The following tasks will be required to achieve the research objectives for both phases of this project:

1. Producing Plant Mixtures.
2. Testing and Analysis of Asphalt Binders and Mixtures.
3. Construction and Evaluation of Field Test Sections.
4. Reporting.

## **Progress this Quarter (includes meetings, work plan status, contract status, significant progress, etc.):**

During this quarter, the research team has focused on three tasks:

1. Phase II testing and analysis
2. Phase III testing and analysis
3. Additional task development

### **1. Phase II**

The research team is completing testing and analysis of the VA mixtures and is putting together the report for these mixtures. There have been delays with the testing of the NH field cores due to equipment issues. It is expected that these issues will be resolved in the next month and testing will be completed during the next quarter. The Phase II report will be completed and sent to the technical committee for review this fall.

### **2. Phase III**

The Phase III testing is complete except for the final mixture binder tests. The results for this phase of the project were used to write a paper submitted to TRB (draft submission attached). The Phase III report will be completed during the next quarter and submitted to the technical committee for review.

### **3. Additional Task Development**

A web conference was held in May to discuss the additional silo storage study task. Several states committed to additional funds so that the additional set of virgin mixtures can be tested. The contracting is currently underway so that this testing can begin during the upcoming quarter.

Additionally, a paper examining all of the Phase I fatigue data and analysis was submitted to the Association of Asphalt Paving Technologists. A draft of this paper is also attached.

**Anticipated work next quarter:**

1. Complete testing of Phase II mixtures, begin drafting Phase II report
2. Finish testing and analysis of Phase III test specimens, submit Phase III draft report to technical committee
3. Begin testing the new set of virgin mixtures for the silo storage study additional task

**Significant Results:**

The significant results for this quarter are summarized in the two papers that were submitted in July (attached).

**Circumstance affecting project or budget. (Please describe any challenges encountered or anticipated that might affect the completion of the project within the time, scope and fiscal constraints set forth in the agreement, along with recommended solutions to those problems).**

Equipment issues affecting the testing of the NH Phase II field cores. These issues are expected to be resolved in the next month and testing will resume.

**Potential Implementation:**